

REMARKS/ARGUMENTS

Claims 2-4 are pending in the present application. The claims stand rejected under 35 U.S.C. § 102(e) for allegedly being anticipated by Gordon *et al.* (US Patent No. 6,309,875) and under 35 U.S.C. § 102(b) for allegedly being anticipated by Jones *et al.* (US Patent No. 5,8585,671).

It is well settled that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051 (Fed. Cir. 1987) and MPEP §2131. As explained below, the cited references fail to teach each and every element of the claimed invention.

Gordon

As noted by the Examiner, Gordon discloses a system of processing a nucleic acid sample contained in a liquid. As explained in the Summary of the Invention beginning at Column 3, line 51, the Gordon invention relies on agitation of a liquid sample over a nucleic acid array under centrifugal force. Preferably, the agitation involves rotation about an agitation axis that is orthogonal to the centrifugal force. In particular, the system in Gordon employs a reaction cell (30) that is held on an agitation-drive mount (29). As explained at Column 5, lines 1-13, the reaction cell comprises an interior volume comprising the sample liquid (39) and the hybridization array (40). As explained at Column 5, line 55 to Column 6, line 12 and illustrated in Figures 2A-2C, agitation of the sample liquid on the hybridization array is caused by rotation of the reaction cell about the agitation axis (41). Thus, in the system of Gordon, the *entire* reaction cell is rotated to achieve agitation of the sample liquid.

The claimed system, in contrast, includes a cartridge (corresponding to the reaction cell of Gordon) which comprises a chamber in which an oligonucleotide array faces a wall, which as stated in claim 2 (a.3) comprises

(a.3) a rigid segment of said wall being adapted to
be swung about a predetermined angle back and forth
about a torsion bar, swinging of the rigid segment in

one sense moving one end thereof towards said active surface, and swinging of the rigid segment in an opposite sense moving said one end of that segment away from said active surface (emphasis added)

Thus, the claimed system agitates the sample liquid by movement of a rigid segment *within* the cartridge, as opposed to movement of the *entire* cartridge on a centrifuge as taught by Gordon. Indeed, the Examiner apparently acknowledges this fact in the rejection by alleging that Gordon teaches a rigid segment "that is adapted to being *centrifuged*." (see Office Action, page 3, lines 5-7, emphasis added).

The distinction between the claimed invention and the devices described by Gordon is illustrated in Figures 1 and 2, which shows the cartridge (42) comprising a chip shaped carrier (44) which carries an oligonucleotide array on its active surface (45). Opposed to the array is a rigid segment (47) which rotates (as illustrated by the arrows) about a torsion bar (59). Movement of the rigid segment causes motion of the liquid in the channel (43) with respect to the oligonucleotide array on the active surface of the carrier. The rigid segment is connected by suitable drive means (e.g., belt (64) and pulleys (65 and 66)) which are connected to motor (63). Clearly the movement of the rigid segment as claimed is not related to centrifugation, as taught by Gordon.

Claim 3, which depends from claim 2, has the same limitation. Claim 4 is directed to cartridges of the invention and has the same limitation in subparagraph (c). Thus each of the pending claims comprises an element that is not disclosed by Gordon. In the absence of a showing how this element is disclosed or suggested by Gordon, the present rejection is improper and should be withdrawn.

Jones

The Jones patent describes methods for sequencing nucleic acids using hybridization and PCR amplification techniques. As noted by the Examiner, the hybridization methods can be carried out using nucleic acid arrays, as described in Columns 36-38 and Figures 8 and 9. As in the case of the Gordon patent, the Jones patent uses centrifugal force to mix the

sample solution and the arrays. In the description of Figure 9 at the bottom of Column 36, the patentees state that chips comprising the nucleic acid arrays are placed on a turntable and reagents are placed in the center. Centrifugal force drives the reagents radially outward to the chips. The chips are configured for flow-through operation to allow removal of the reagents from the chips.

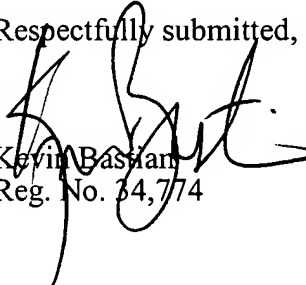
Again, the rejection is based on an assertion that the rigid segment in the present invention is adapted to move by centrifugation (Office Action, page 4, lines 6-8). Nothing in the description cited by the Examiner refers to the use of a rigid segment that is adapted to be swung about a predetermined angle back and forth about a torsion bar, as explicitly claimed here. As explained above, the movement of the rigid segment in the present invention is not achieved through centrifugation. The claimed system is thus distinguished from the cited art because agitation of the sample liquid occurs by movement of a rigid segment *within* the cartridge, as opposed to movement of the *entire* cartridge on a centrifuge.

In light of the above, the rejection is improper and should be withdrawn.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If a telephone conference would expedite prosecution of this application, the Examiner is invited to telephone the undersigned at 415-576-0200.

Respectfully submitted,



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